Amendments to the Claims

The current listing of the claims replaces all previous amendments and listings of the claims.

1. (Currently Amended) A process liquid supply nozzle[[,]] comprising:

a substantially tubular nozzle provided with a discharge port for discharging a process liquid[[,]];

a substantially bowl-shaped nozzle holder provided with a through-hole into which the nozzle can be inserted~~, and~~;

a free space formed between an inner circumferential surface of the nozzle holder and an outer circumferential surface of the nozzle, at least a prescribed cleaning liquid being supplied into the free space[[,]]; and

~~wherein~~ means for relatively moving the nozzle holder and the nozzle ~~are relatively movable~~ in a vertical direction such that the process liquid is discharged from the discharge port of the nozzle ~~under the~~ in a state that the discharge port of the nozzle protrudes downward from the through-hole, and the nozzle is cleaned with a cleaning liquid ~~under the~~ in a state that the nozzle is housed in the nozzle holder.

2. (Original) The process liquid supply nozzle according to claim 1, wherein a gas is supplied into the free space under the state that the nozzle is housed in the nozzle holder.

3. (Original) The process liquid supply nozzle according to claim 1, wherein a spiral groove is formed on the inner circumferential surface of the nozzle holder.

4. (Original) The process liquid supply nozzle according to claim 1, wherein the outer circumferential surface of the nozzle is rough and exhibits a hydrophilicity.

5. (Currently Amended) A process liquid supply nozzle[[,]] comprising:

a substantially tubular nozzle provided with a discharge port for discharging a process liquid[[,]];

a substantially bowl-shaped nozzle holder provided with a hole portion having a regularly polygonal planar shape into which the nozzle can be inserted[[,]]; and

a free space formed between an outer circumferential surface of the nozzle and an inner circumferential surface of the nozzle holder, at least a prescribed cleaning liquid being supplied into the free space,

wherein the nozzle is arranged to extend through a central portion of the hole portion, and the outer circumferential surface of the nozzle is substantially in a point-to-point contact with a wall of the hole portion in a midpoint of each side of the regularly polygonal planar shape.

6. (Canceled)

7. (Currently Amended) The process liquid supply nozzle according to claim 5, ~~wherein~~ further comprising means for rotating at least one of the nozzle and the nozzle holder ~~is rotatable~~ by a prescribed angle.

8. (Original) The process liquid supply nozzle according to claim 5, wherein a spiral groove is formed on the inner circumferential surface of the nozzle holder.

9. (Original) The process liquid supply nozzle according to claim 5, wherein the outer circumferential surface of the nozzle is rough and exhibits a hydrophilicity.

10. (Canceled)

11. (Withdrawn) A process liquid supply nozzle, comprising a substantially tubular nozzle provided with a discharge port for discharging a process liquid, a substantially bowl-shaped nozzle holder provided with a through-hole into which the nozzle can be inserted, a plurality of projections formed on an outer circumferential surface of the nozzle in a manner

to project in a radial direction of the nozzle, and a free space formed between the outer circumferential surface of the nozzle and an inner circumferential surface of the nozzle holder, at least a prescribed cleaning liquid being supplied into the free space,

wherein the projections are in a point-to-point contact with a wall of the through-hole.

12. (Currently Amended) A process liquid supply device, comprising:

a process liquid supply nozzle including a substantially tubular nozzle provided with a discharge port for discharging a process liquid, a substantially bowl-shaped nozzle holder provided with a through-hole into which the nozzle can be inserted, and a free space formed between an inner circumferential surface of the nozzle holder and an outer circumferential surface of the nozzle;

a process liquid supply mechanism for supplying the process liquid into the nozzle;

a cleaning liquid supply mechanism for supplying a prescribed cleaning liquid into the free space for cleaning the nozzle; and

a nozzle moving mechanism for relatively moving the nozzle and the nozzle holder in a vertical direction such that the process liquid is discharged from the discharge port of the nozzle ~~under the~~ in a state that the discharge port protrudes downward from the through-hole of the nozzle holder or the nozzle is cleaned with the cleaning liquid ~~under the~~ in a state that the nozzle is housed in the nozzle holder.

13. (Original) The process liquid supply device according to claim 12, further comprising a gas supply mechanism for supplying a prescribed gas into the free space.

14. (Original) The process liquid supply device according to claim 12, wherein a spiral groove is formed on the inner circumferential surface of the nozzle holder.

15. (Original) The process liquid supply device according to claim 12, wherein the outer circumferential surface of the nozzle is rough and exhibits a hydrophilicity.

16. (Currently Amended) A process liquid supply device, comprising:

a process liquid supply nozzle including a substantially tubular nozzle provided with a discharge port for discharging a prescribed process liquid, a substantially bowl-shaped nozzle holder provided with a hole portion having a regularly polygonal planar shape into which the nozzle can be inserted, and a free space formed between an inner circumferential surface of the nozzle holder and an outer circumferential surface of the nozzle, the nozzle being arranged to extend through a central portion of the hole portion, and the outer circumferential surface of the nozzle being substantially in a point-to-point contact with a wall of the hole portion in a midpoint of each side of the regularly polygonal planar shape;

a process liquid supply mechanism for supplying the prescribed process liquid into the nozzle; and

a cleaning liquid supply mechanism for supplying a prescribed cleaning liquid into the free space for cleaning the nozzle.

17. (Canceled)

18. (Original) The process liquid supply device according to claim 16, further comprising a rotating mechanism for rotating at least one of the nozzle and the nozzle holder by a prescribed angle.

19. (Original) The process liquid supply device according to claim 16, further comprising a gas supply mechanism for supplying a prescribed gas into the free space.

20. (Original) The process liquid supply device according to claim 16, wherein a spiral groove is formed on the inner circumferential surface of the nozzle holder.

21. (Original) The process liquid supply device according to claim 16, wherein the outer circumferential surface of the nozzle is rough and exhibits a hydrophilicity.

22. (Canceled)

23. (Withdrawn) A process liquid supply device, comprising:

a process liquid supply nozzle including a substantially tubular nozzle provided with a discharge port for discharging a prescribed process liquid, a substantially bowl-shaped nozzle holder provided with a through-hole into which the nozzle can be inserted, a plurality of projections formed on an outer circumferential surface of the nozzle in a manner to project in a radial direction of the nozzle, and a free space formed between an inner circumferential surface of the nozzle holder and the outer circumferential surface of the nozzle, the nozzle being arranged to extend through a central portion of the through-hole, and the projections being substantially in a point-to-point contact with a wall of the through-hole;

a process liquid supply mechanism for supplying the prescribed process liquid into the nozzle; and

a cleaning liquid supply mechanism for supplying a prescribed cleaning liquid into the free space for cleaning the nozzle.

24. (Withdrawn) A nozzle cleaning method for removing a residual process liquid attached to a substantially tubular nozzle for discharging a prescribed process liquid, comprising the steps of:

housing the nozzle in a substantially bowl-shaped nozzle holder having a through-hole formed in a lower edge portion; and

removing the residual process liquid attached to the nozzle by means of supplying a cleaning liquid into a free space formed between an outer circumferential surface of the nozzle and an inner circumferential surface of the nozzle holder and discharging the cleaning liquid from the free space through the through-hole such that a prescribed amount of the cleaning liquid is kept stored in the free space.

25. (Withdrawn) The nozzle cleaning method according to claim 24, wherein a spiral groove is formed on the inner circumferential surface of the nozzle holder, and the cleaning liquid is discharged from the free space while allowing the cleaning liquid to whirl on the outer circumferential surface of the nozzle along the spiral groove.

26. (Withdrawn) The nozzle cleaning method according to claim 24, wherein a prescribed gas is also supplied into the free space when the cleaning liquid is supplied into the free space.

27. (Withdrawn) The nozzle cleaning method according to claim 24, wherein a prescribed gas is supplied into the free space after the step of removing the residual process liquid attached to the outer circumferential surface of the nozzle by supplying the cleaning liquid so as to remove the residual cleaning liquid attached to the outer circumferential surface of the nozzle, thereby drying the outer circumferential surface of the nozzle.

28. (Withdrawn) A nozzle cleaning method for removing a residual process liquid attached to a substantially tubular nozzle for discharging a prescribed process liquid, comprising:

mounting the nozzle in a substantially bowl-shaped nozzle holder having a through-hole formed in a lower edge portion;

cleaning the nozzle to remove the residual process liquid attached to the nozzle by means of supplying a cleaning liquid into a free space formed between an outer circumferential surface of the nozzle and an inner circumferential surface of the nozzle holder and discharging the cleaning liquid from the free space through-hole such that a prescribed amount of the cleaning liquid is kept stored in the free space; and

cleaning again the nozzle to remove the remaining process liquid by means of rotating any one of the nozzle and the nozzle holder by a prescribed angle and then supplying again the cleaning liquid into the free space.

29. (Withdrawn) The nozzle cleaning method according to claim 28, wherein a spiral groove is formed on the inner circumferential surface of the nozzle holder, and the cleaning liquid is discharged from the free space while allowing the cleaning liquid to whirl on the outer circumferential surface of the nozzle along the spiral groove.

30. (Withdrawn) The nozzle cleaning method according to claim 28, wherein a prescribed gas is also supplied into the free space when the cleaning liquid is supplied into the free space.

31. (Withdrawn) The nozzle cleaning method according to claim 28, wherein a prescribed gas is supplied into the free space after the step of removing the residual process liquid attached to the outer circumferential surface of the nozzle by supplying the cleaning liquid so as to remove the residual cleaning liquid attached to the outer circumferential surface of the nozzle, thereby drying the outer circumferential surface of the nozzle.